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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/567,945

02/10/2006

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02/17/2011

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EXAMINER

MCCULLEY, MEGAN CASSANDRA

ART UNIT

PAPER NUMBER

1767

NOTIFICATION DATE

DELIVERY MODE

02/17/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/567,945 | DIAKOUMAKOS ET AL. | |
| | Examiner | Art Unit | |
| | Megan McCulley | 1767 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30 and 45-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30 and 45-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 30 and 45-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marten et al. (U.S. Pat. 5,847,027) in view of Majumdar et al. (US 2003/0100656). Eichorst et al. (US 2001/0019813).

Regarding claims 30, 47: Marten et al. teaches a method of mixing (col. 3 lines 60-65) a cyclocarbonate resin (col. 5 lines 45-50), a natural or synthetic, modified or unmodified nano-clay/bentonite (col. 15 lines 45-53) and a hardener/polyamine (col. 5 lines 60-61). Curing is disclosed (col. 16 lines 15-20) to form a urethane based polymer (col. 5 lines 60-65). There is no isocyanate used. The clay additive can be added to the curable mixture before processing/curing (col. 14 lines 50-55).

Marten et al. does not teach the claim having a platelet thickness of 4-8 angstroms and an aspect ratio higher than 100. However, Majumdar et al. teaches a similar composition having a clay with a thickness of 0.5-10 nm (5-100 angstrom) and an aspect ratio of above 100 (para. 32). Marten et al. and Majumdar et al. are analogous art since they are both concerned with the same field of endeavor, namely clay filled polymer matrices. At the time of the invention a person having ordinary skill in the art would have found it obvious to substitute the clay of Marten et al. with the clay of Majumdar et al. and would have been motivated to do so since the size and shape of the particles ensure adequate improvements in properties such as mechanical and

barrier properties, while minimizing deleterious affects such as haze and abrasiveness, as evidenced by Majumdar et al. (para. 32).

Regarding claim 45: Marten et al. teaches the cyclocarbonate resin is made from amine modified epoxy resin and carbon dioxide (example 2), which would produce the claimed structure where R₁ and R₂ are linear or branched or cyclic saturated or unsaturated nitrogen containing groups.

Regarding claim 46: Marten et al. teaches further mixing an epoxy (col. 5 lines 55-60).

Regarding claim 48: Marten et al. teaches the composition is cured at room temperature (col. 16 lines 15-20).

Response to Arguments

Applicant's arguments filed December 2, 2010 have been fully considered but they are not persuasive.

Applicant's argument that Marten et al. teaches adding the additive to the fully cured polyurethane is not persuasive. While it is recognized that Marten et al. teaches an embodiment where the additives are added to the fully reacted components (col. 15 lines 53-58), Marten et al. also discloses an embodiment in which the additives are added to the **curable** mixture **before** processing (col. 14 lines 50-55). Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiment (MPEP 2123 II).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan McCulley whose telephone number is (571)270-3292. The examiner can normally be reached on Monday, Wednesday, Thursday, and Friday 8:30-4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1767

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. M./
Examiner, Art Unit 1767

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1767